The following Listing of the Claims will replace all prior versions and all prior listings of the claims in the present application:

Listing of the Claims:

1. (Currently Amended): An electrically conducting carbon nanotube array comprising:

a) at least one pair of carbon nanotube tubules ~~with~~ each having a proximal end and a distal end, said proximal ends attached directly to a substrate;

b) a metallic material attached to at least a portion of the carbon nanotube tubules including the distal end; and

c) an electrically conductive biological compound~~, wherein the electrically conductive biological compound is~~ attached to the metallic material, and provides electrical connectivity between the pair of nanotube tubules.

2. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 comprising at least one pair of electrically conductive aligned nanotube tubules positioned proximally on a substrate surface such that their distal ends are bridged by the electrically conductive biological compound.

3. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the nanotube tubule is a single wall or a multi-walled carbon nanotube.

4. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the metallic material comprises at least one metal, an alloy or combinations thereof.

5. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the metallic material is selected from the group consisting of gold, silver, platinum, copper, nickel, cobalt and aluminum.

6. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the metallic material is gold.

7. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the metallic material is located at the distal end of the nanotube tubule.

8. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the metallic material is present as a surface coating on the carbon nanotube tubule.

9. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the metallic material is present as a particulate at the terminal end of the carbon nanotube tubule.

10. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the metallic material comprises a polymeric or glass bead wherein surface of said bead contains a metal deposited thereon.

11. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the substrate is a non-metallic material.

12. (Currently Amended): The electrically conducting carbon nanotube array of claim 11 wherein the substrate is a an electrically semi-conducting material.

13. (Currently Amended): The electrically conducting carbon nanotube array of claim 12 wherein the substrate is silicon.

14. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the electrically conductive biological compound is chemically bonded to the metallic material.

15. (Canceled) : The carbon nanotube array of claim 1 further comprising at least one biological compound wherein said biological compound is capable of conducting electrical charge.

16. (Canceled): The carbon nanotube array of claim 1 wherein an electrical contact is established by the electrically conductive biological compound between at least two nanotube tubules in the carbon nanotube array.

17. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the electrically conductive biological compound is immobilized on the surface of material via surface adsorption, ionic bonding, hydrogen bonding or covalent chemical bonding.

18. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the electrically conductive biological compound includes a substituent selected from the group consisting of thiol, thiophenol, thiocarboxylic acid, carboxylic acid and disulfide.

19. (Currently Amended): The electrically conducting carbon nanotube array of claim 18 wherein the substituent is a thiol.

20. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the electrically conductive biological compound is a nucleic acid, oligonucleotide, amino acid, enzyme, protein or segments or derivatives thereof.

21. (Currently Amended): The electrically conducting carbon nanotube array of claim 20 wherein the electrically conductive biological compound is a chemically derivatized nucleic acid, amino acid enzyme, protein or a segment thereof.

22. (Currently Amended): The electrically conducting carbon nanotube array of claim 1 wherein the electrically conductive biological compound is DNA, RNA, or segments or derivatives thereof.

23. (Currently Amended): The carbon nanotube array of claim 1 wherein the electrically conductive biological compound is single-stranded DNA, derivatized single-stranded DNA or segments or derivatives thereof.

24. (Currently Amended): A molecular sensor device comprising:

a) an electrically conducting carbon nanotube array comprising at least ~~one pair of~~ two carbon nanotube tubules each comprising a proximal end and a distal end, said proximal ends attached directly to a substrate;

b) a metallic material attached to at least a portion of the carbon nanotube tubules including their distal ends; and

c) an electrically conductive biological compound ~~immobilized on the metallic material, wherein the biological compound is electrically conductive~~ attached to the metallic material and provides an electrical contact between the ~~pair of~~ carbon nanotube tubules.

25. (Previously Amended): The molecular sensor device of claim 24 wherein the carbon nanotube tubules are single walled or multi-walled.

26. (Previously Amended): The molecular sensor device of claim 24 wherein the metallic material comprises at least a one metal, a metallic alloy or combinations thereof.

27. (Original): The molecular sensor device of claim 24 wherein the metallic material is selected from the group consisting of gold, silver, platinum, copper, nickel, cobalt and aluminum.

28. (Original): The molecular sensor device of claim 24 wherein the metallic material is gold.

29. (Previously Amended): The molecular sensor device of claim 24 wherein the metallic material is located at the distal end of the carbon nanotube tubule.

30. (Previously Amended): The molecular sensor device of claim 24 wherein the metallic material is present as a surface coating on the carbon nanotube tubule.

31. (Previously Amended): The molecular sensor device of claim 24 wherein the metallic material is present as a particulate at the terminal end of the carbon nanotube tubule.

32. (Original): The molecular sensor device of claim 24 wherein the metallic material comprises a polymeric or glass bead wherein surface of said bead contains a metal deposited thereon.

33. (Canceled): The molecular sensor device of claim 24 wherein an electrical contact I established between at last two carbon nanotube tubules in the array by the surface immobilized biological compound.

34. (Original): The molecular sensor device of claim 24 wherein the biological compound is immobilized on the surface of material via surface adsorption, ionic bonding, hydrogen bonding or covalent chemical bonding.

35. (Original): The molecular sensor device of claim 24 wherein the biological compound is chemically derivatized to include a substituent selected from thiol, thiophenol, thiocarboxylic acid, carboxylic acid and disulfide.

36. (Previously Amended): The molecular sensor device of claim 35 wherein the substituent is thiol.

37. (Original): The molecular sensor device of claim 24 wherein the biological compound is a nucleic acid, amino acid enzyme or protein or derivatives thereof.

38. (Original): The molecular sensor device of claim 24 wherein the biological compound is a chemically derivatized nucleic acid, amino acid enzyme, protein or a segment thereof.

39. (Previously Amended): The molecular sensor device of claim 24 wherein the biological compound is selected from the group consisting of DNA, RNA, and segments or derivatives thereof.

40. (Original): The molecular sensor device of claim 24 wherein the biological compound is single-stranded DNA, derivatized single-stranded DNA or segments thereof.

41. (Previously Amended): The molecular sensor device of claim 24 that is capable of sensing and detecting microorganisms, viruses, toxins, proteins, nucleic acids, amino acids, enzymes and biologically active chemicals.

42. (Original): The molecular sensor device of claim 41 wherein the microorganisms are pathogenic bacteria, yeast or fungi.

43. (Original): The molecular sensor device of claim 42 wherein the microorganism is Bacillus anthtracis (anthrax).

44. (Canceled) A method of manufacturing a sensor device comprising at least one carbon nanotube comprising the steps of:

a) patterning the surface of a substrate with a catalytic material;

b) exposing patterned catalytic materials under conditions sufficient to cause individual carbon nanotubes to grow from the said catalytic materials to constitute an array;

c) depositing a metallic material on individual nanotubes; and

d) depositing at least one sensing agent on the metallic material coating such that the said agent bridges two or more individual nanotubes to permit electrical conduction between said nanotubes upon interaction of said sensing agent with a target species.

45. (Canceled): The method of claim 44 wherein said substrate material is an electrical semi-conductor or a electrical insulator.

46. (Canceled): The method of claim 44 wherein said substrate material is selected from the group consisting of silicon, germanium, silicon nitride, silica, alumina and quartz.

47. (Canceled): The method of claim 44 wherein the catalyst material is a metal, metal oxide, a metal alloy, an organometallic compound or mixtures thereof.

48. (Canceled): The method of claim 47 wherein the catalyst material is selected from the group consisting of nickel, iron, cobalt, molybdenum, tungsten, cobalt and mixtures thereof.

49. (Canceled): The method of claim 47 wherein the organometallic compound is ferrocene or nickelocene.

50. (Canceled): The metallic material of claim 44 wherein the metallic material is selected from the group consisting of gold, silver, platinum, copper, nickel, cobalt and aluminum.

51. (Canceled): The metallic material of claim 44 wherein the metallic material is gold.

52. (Canceled): The metallic material of claim 44 wherein the metallic material comprises a polymeric or glass bead wherein surface of said bead contains a metal deposited thereon.

53. (Canceled): The method of claim 44 wherein the metallic material is a metal alloy comprising nickel-gold or nickel-silver.

54. (Canceled): The method of claim 44 wherein the sensing agent is a biological compound.

55. (Canceled): The method of claim 54 wherein the biological compound is a nucleic acid, oligonucleotide, amino acid enzyme, protein or derivatives thereof.

56. (Canceled): The method of claim 54 wherein the biological compound is a chemically derivatized nucleic acid, amino acid enzyme, protein or a segment thereof.

57. (Canceled): The method of claim 54 wherein the biological compound is selected from the group consisting of DNA, RNA, and derivatives thereof.

58. (Canceled): The method of claim 54 wherein the biological compound is single- stranded DNA, derivatized single-stranded DNA or segments thereof.

59. (Canceled): A method of manufacturing a sensor device comprising at least one carbon nanotube comprising the steps of:

a) patterning the surface of a substrate with a catalytic material;

b) exposing patterned catalytic materials under conditions sufficient to cause individual carbon nanotubes to grow from the said catalytic materials to constitute an array;

c) depositing a metallic material on inorganic or organic beads;

d) depositing at least one sensing agent on the metallic material containing beads; and

e) immobilizing the beads containing sensing agent and metallic material to individual carbon nanotubes said agent bridges two or more individual nanotubes to permit electrical conduction between said nanotubes upon interaction of said sensing agent with a target species.

60. (Previously Presented): The molecular sensor device of claim 24 wherein the electrical contact between the pair of carbon nanotube tubules provides electrical charge conduction.

61. (Previously Presented): The molecular sensor device of claim 24 wherein the biological compound interacts with a target species to produce a change in electrical conductivity in the sensor device.